

CLAIMS

1 1. A biodegradable shrink film comprising a mixture of lactic acid and polyglycolic acid,
2 said mixture having at least 75% lactic acid by weight, such that said film is used to anastomose
3 two fractured ends of tissue such that the tissue will heal.

1 2. The biodegradable shrinkable film of claim 1, wherein the lactic acid is polylactic
2 acid.

1 3. The biodegradable shrinkable film of claim 1, wherein the polylactic acid is L-
2 polylactic acid.

1 4. The biodegradable shrinkable film of claim 1, wherein the biodegradable composition
2 includes a plasticizer.

1 5. The biodegradable shrinkable film of claim 4, wherein the plasticizer is L-lactide.

1 6. The biodegradable shrinkable film of claim 5, wherein said composition includes at
2 least 3% by weight of said plasticizer is added.

1 7. The biodegradable shrinkable film of claim 5, wherein said composition has a glass
2 transition temperature of between about 37-45°C.

1 8. The biodegradable shrinkable film of claim 5, wherein the percent of elongation is
2 between approximately 3 and 10%.

1 9. The biodegradable shrinkable film of claim 8, wherein the degradation time of said
2 film when positioned around the fractured ends of the tissue is approximately between 2 months
3 and 2 years.

1 10. A biodegradable tubular device used to anastomose two fractured ends of tissue,
2 said tubular device comprises a shrinkable film formed into a tube wherein said film comprises
3 a mixture of lactic acid and polyglycolic acid, said mixture having at least 75% lactic acid by
4 weight, said tube is shrunk in place over the two fractured ends of tissue to hold the tissue
5 together, such that they will heal.

1 11. The biodegradable tubular device of claim 10, wherein the lactic acid is polylactic
2 acid.

1 12. The biodegradable tubular device of claim 11, wherein the polylactic acid is L-
2 polylactic acid.

1 13. The biodegradable tubular device of claim 10, wherein the biodegradable
2 composition includes a plasticizer.

1 14. The biodegradable tubular device of claim 13, wherein the plasticizer is L-lactide.

1 15. The biodegradable tubular device of claim 14, wherein said composition includes at
2 least 3% by weight of said plasticizer is added.

1 16. The biodegradable tubular device of claim 15, wherein said composition has a glass
2 transition temperature of between about 37-45°C.

1 17. The biodegradable tubular device of claim 15, wherein the percent of elongation is
2 between approximately 3 and 10%.

1 18. The biodegradable tubular device of claim 15, wherein the degradation time is
2 approximately between 2 months and 2 years.

1 19. A biodegradable shrink film comprising a copolymer of lactic acid and
2 polyglycolic acid, wherein said copolymer is at least 75% lactic acid by weight, such that said
3 film is shrunk over two fractured ends of tissue.

1 20. The biodegradable shrinkable film of claim 19, wherein said copolymer is at least
2 85% lactic acid by weight.

1 21. The biodegradable shrinkable film of claim 19, wherein the lactic acid is polylactic
2 acid.

1 22. The biodegradable shrinkable film of claim 21, wherein the polylactic acid is L-
2 polylactic acid.

1 23. The biodegradable shrinkable film of claim 19, wherein the biodegradable
2 copolymer includes a plasticizer.

1 24. The biodegradable shrinkable film of claim 23, wherein the plasticizer is L-lactide.

1 25. The biodegradable shrinkable film of claim 24, wherein said copolymer includes at
2 least 3% by weight of said plasticizer is added.

1 26. The biodegradable shrinkable film of claim 25, wherein said copolymer has a glass
2 transition temperature of between about 37-45°C.

1 27. The biodegradable shrinkable film of claim 25, wherein the percent of elongation
2 is between approximately 3 and 10%.

1 28. The biodegradable shrinkable film of claim 25, wherein the degradation time of
2 said film is approximately between 2 months and 2 years.

1 29. The biodegradable shrinkable film of claim 19, wherein the porosity is less than
2 approximately 5 μ m.

1 30. A method for anastomosing two ends of tissue, said method comprising the steps
2 of:

3 a) placing a biodegradable shrink film around each end of tissue; and

4 b) increasing the temperature of the shrink film to its glass transition temperature,
5 wherein the biodegradable shrink film comprises a mixture of lactic acid and polyglycolic acid
6 having at least 75% lactic acid by weight.

1 31. The method of claim 30 wherein step b) is achieved by pouring warm saline
2 around the biodegradable shrink film.

1 32. The method of claim 31 wherein the warm saline is approximately 42°C.

1 33. The method of claim 30 further comprising:
2 setting a fixation device around the two ends of tissue.

1 34. The method of claim 30 wherein there exists a space in between the two ends of
2 tissue.

1 35. The method of claim 34 further comprising:
2 prior to step a), implanting a biodegradable matrix seeded with growth factors into the
3 space between the two ends of tissue.

1 36. A method for preventing tissue from collapsing into a void, the method
2 comprising:
3 placing a biodegradable shrink film over the void, wherein the biodegradable shrink film
4 comprises a mixture of lactic acid and polyglycolic acid having at least 75% lactic acid by
5 weight.